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The MONTHLY WEATHER REVIEW is based on data from about 3500 land stations and many ocean reports from vessels taking the international simultaneous observation at Greenwich noon.

Special acknowledgment is made of the data furnished by the kindness of cooperative observers, and by Prof. R. F. Stupart, Director of the Meteorological Service of the Dominion of Canada; Señor Manuel E. Pastrana, Director of the Central Meteorological and Magnetic Observatory of Mexico; Camilo A. Gonzales, Director-General of Mexican Telegraphs; Capt I. S. Kimball, General Superintendent of the United States Life-Saving Service; Commandant Francisco S. Chaves, Director of the Meteorological Service of the Azores, Ponta Delgada, St. Michaels, Azores; W. N. Shaw, Esq., Secretary, Meteorological Office, London; H. H. Cousins, Chemist, in charge of the Jamaica Weather Office; Señor Anastasio Alfaro, Director of the National Observatory, San José, Costa Rica; Rev. L. Gangoiti, Director of the Meteorological Observatory of Belen College, Havana, Cuba.

As far as practicable the time of the seventy-fifth meridian, which is exactly five hours behind Greenwich time, is used in the text of the MONTHLY WEATHER REVIEW.

Barometric pressures, both at land stations and on ocean vessels, whether station pressures or sea-level pressures, are reduced, or assumed to be reduced, to standard gravity, as well as corrected for all instrumental peculiarities, so that they express pressure in the standard international system of measures, namely, by the height of an equivalent column of mercury at 32° Fahrenheit, under the standard force, i. e., apparent gravity at sea level and latitude 45°.

SPECIAL ARTICLES, NOTES, AND EXTRACTS.

RECORDS OF THE DIFFERENCE OF TEMPERATURE BETWEEN MOUNT ROYAL AND McGILL COLLEGE OBSERVATORY, AND A METHOD OF LOCAL TEMPERATURE FORECASTING.

By C. H. McLEOD, Superintendent of the Meteorological Observatory, and H. T. BARNES, Associate Professor of Physics, McGill University.
Dated Montreal, Canada, December 5, 1906.

In 1897 the British Association made a grant of £50 toward an investigation of the changes of temperature due to differences in altitude at Montreal. In the early summer of 1899 suitable electric recording instruments were installed in the McGill College Meteorological Observatory, and a wire connection was established between the observatory grounds and a tower, 47 feet high, placed on the summit of Mount Royal. The thermometers were of the ordinary electrical-resistance type, of 10 ohms, composed of coils of .006-inch platinum wire wound on mica frames. The two thermometers constituted a differential pair, and were in consequence carefully adjusted to equality.

The general principle of the Wheatstone's bridge connections for the electrical-resistance thermometer, as designed by Professor Callendar, is already well known. The method of compensation, which consists in placing in the opposite arm of the bridge a loop of wire equal in length and resistance to the thermometer leads and stretching over precisely the same path, renders the records independent of variations of temperature in the connections. These may, therefore, be made of any length desired. Until these records were obtained no test had been made of this compensation system over so great a distance, and it was consequently a matter of some interest to observe how well the method served.

The mountain thermometer is placed near the top of the tower, and is approximately 800 feet above sea level. It is protected by a single screen cage commonly used for protecting observatory thermometers. The cage is hung from the underside of the topmost platform of the tower and is, therefore, protected from the effects of direct radiation. The observatory thermometer is placed four feet above the ground in the cage used for protecting the standard mercury thermometer, and is 187 feet above sea level. The difference in elevation between the two thermometers is therefore 620 feet, and the position of the mountain thermometer is northwest from the observatory. The horizontal distance between the stations is 3300 feet, and the actual length of connecting cable is 4100 feet. The first connection that was made between the mountain top and the observatory was with four ordinary electric light wires of No. 14 gage. These were supported on glass insulators on poles placed at intervals up the side of the mountain. By this means records were obtained of the difference in temperature between the high and low levels during fine and dry weather, but in wet weather the insulation proved so defective as to render successful operation impossible.

It was not until 1903 that a satisfactory cable could be procured and placed in position. A special telephone cable containing eleven paper-covered No. 14 copper wires surrounded by a lead cover was hung from a stout wire supported on the poles. Four of these wires were used for the thermometer circuits, and the remaining wires were used for the anemograph and other instruments required on the tower for the meteorological work. Two of the four wires were used for the thermometer connection proper, and the other two for the compensating loop. Each pair of wires measured 40 ohms resistance.

The readings were commenced under the improved conditions in July of that year, and have extended to the present time, with the exception of two unavoidable delays during the summers of 1904 and of 1905. These were caused by defective repairing of a cut made in the mountain line by some unknown person.

One of the Callendar electric recorders is used to obtain permanent traces of the difference in temperature, and it is arranged to operate on the 100-volt direct-current lighting circuit thru a 16-candle-power lamp.

The pen marking on the record sheet is drawn to one side or the other of the line of equal temperatures, depending on whether the mountain thermometer is warmer or colder than the one at the observatory. A D'Arsonval galvanometer is provided with a light arm about six inches long containing two wires which make metallic contact with two wires on the circumference of a wheel operated by clockwork. Either one or the other wire of the arm touches the corresponding clock-wire, depending on the deflection of the galvanometer. When